

CLAIMS

1. A method of analysing results from an electromagnetic survey of an area that is thought or known to contain a subterranean hydrocarbon reservoir, comprising:
 - 5 providing vertical electric dipole (VED) response data obtained by at least one VED detector detecting a signal from a horizontal electric dipole (HED) transmitter;
 - providing background data specific to the area being surveyed; and
 - comparing the VED response data with the background data to obtain difference data sensitive to the presence of a subterranean hydrocarbon reservoir.
- 10 2. A method of analysing results from an electromagnetic survey according to claim 1, wherein the background data are obtained from a controlled source electromagnetic survey.
- 15 3. A method of analysing results from an electromagnetic survey according to claim 1, wherein the background data are obtained from a magneto-telluric electromagnetic survey.
- 20 4. A method of analysing results from an electromagnetic survey according to claim 1, wherein the background data are further VED response data obtained from another electromagnetic survey of the area performed at a different time.
5. A method of analysing results from an electromagnetic survey according to claim 1, wherein the background data are calculated from a rock formation model.
- 25 6. A method of analysing results from an electromagnetic survey according to claim 5, wherein the rock formation model is derived from a combination of geological data and resistivity data.

7. A method of analysing results from an electromagnetic survey according to claim 6, wherein the geological data are from seismological surveying.
8. A method of analysing results from an electromagnetic survey according to claim 6 or 7, wherein the resistivity data are from well logging.
9. A method of analysing results from an electromagnetic survey according to any one of claims 1 to 8, wherein difference data are obtained as a function of position within the area and are sensitive to boundaries of the subterranean hydrocarbon reservoir.
10. A computer program product bearing machine readable instructions for implementing a method of analysing results from an electromagnetic survey according to any one of any one of claims 1 to 9.
11. A computer apparatus loaded with machine readable instructions for implementing the method of analysing results from an electromagnetic survey according to any one of claims 1 to 9.
12. An electromagnetic survey method applied to an area that is thought or known to contain a subterranean hydrocarbon reservoir, comprising:
 deploying a horizontal electric dipole (HED) transmitter and at least one receiver, the receiver including a vertical electric dipole (VED) detector; and
 collecting from the at least one VED detector VED response data induced by the HED transmitter.
13. An electromagnetic survey method according to claim 12, wherein the receiver comprises a single vertically aligned antenna.

14. An electromagnetic survey method according to claim 12, wherein the receiver comprises a vertically aligned antenna and two horizontally aligned antennae extending in different horizontal directions.
- 5 15. An electromagnetic survey method according to any one of claims 12 to 14, further comprising:
- providing background data specific to the area being surveyed; and
 - comparing the VED response data with the background data to obtain difference data sensitive to the presence of a subterranean hydrocarbon reservoir.
- 10 16. A method of planning an electromagnetic survey of an area that is thought or known to contain a subterranean hydrocarbon reservoir, comprising:
- creating a model of the area to be surveyed including a rock formation containing a postulated hydrocarbon reservoir, and a body of water above the rock
 - 15 formation;
 - setting values for water depth, depth of the postulated hydrocarbon reservoir, and resistivity structure of the rock formation; and
 - performing a simulation of an electromagnetic survey in the model of the survey area by calculating vertical electric dipole (VED) response data obtained by at
 - 20 least one simulated VED detector detecting a signal from a simulated horizontal electric dipole (HED) transmitter; and
 - adjusting the model to remove the postulated hydrocarbon reservoir and repeating the simulation to obtain background data for comparison with the VED response data.
- 25 17. A method of planning an electromagnetic survey according to claim 16, the method further comprising:
- repeating the simulation for a number of transmitter-receiver horizontal separations and frequencies of transmitter signal in order to select optimum surveying

conditions in terms of transmitter-receiver horizontal separations and frequencies for probing the hydrocarbon reservoir.

18. A computer program product bearing machine readable instructions for
5 implementing the method of planning an electromagnetic survey according to any one of claims 16 or 17.

19. A computer apparatus loaded with machine readable instructions for
10 implementing the method of planning an electromagnetic survey according to any one of claims 16 or 17.